DRINKING WATER PROTECTION PLAN

A Discussion Document

January 2001

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MESSAGE FROM THE MINISTER

Turning on the tap and feeling confident that the water that comes out is safe to drink is something British Columbians should be able to take for granted. As you know, a tragedy in Walkerton, Ontario has made us all painfully aware that we have to be constantly vigilant in our efforts to protect our drinking water.

Right now, too many communities in this province remain under a "boil water" advisory for their drinking water. Even in communities where the quality of water is good right now, there are continuing pressures on our watersheds.

Premier Ujjal Dosanjh has made a commitment to better protect our drinking water in this province. This document is our draft plan for doing that. Now we need to hear from you. On behalf of the Government of BC, I invite you to write, fax or email your comments to us. For details on how to provide your comments, please see the end of this paper.

This is your opportunity to be heard on this important issue. Together we can produce a plan that will protect our province's drinking water now and for future generations.

On behalf of Premier Dosanjh and the BC Government, I urge you to participate in determining the future course of this vital issue.

Minister of Environment, Lands and Parks

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DRINKING WATER PROTECTION PLAN

A Discussion Document

A commitment to safe drinking water

Safe drinking water is a serious public health issue. The *E.coli* contamination that resulted in 2,700 illnesses and seven deaths in Walkerton, Ontario in 2000 has made us all aware of the importance of safeguards to protect the public from contaminated drinking water.

British Columbia has a network of safeguards to protect the water we drink, including pollution prevention programs for drinking water sources and public health standards for water treatment. Other measures in areas such as waste management, agriculture and forestry are in place to protect drinking water sources. In 1992 the Safe Drinking Water Regulation was enacted under the *Health Act* to regulate water providers. The Regulation requires them to monitor water quality and warn health authorities of potentially unsafe conditions.

But more can be done. Even with these protections there are cases of contaminated tap water resulting in "boil water" advisories in a number of communities around the province. Contaminated drinking water has caused outbreaks of illness in several BC communities in recent years. While it appears that most of the contamination was caused by wildlife, some was due to human activities and all were preventable by source protection or improved treatment. In 1996, for example, there were more than 12,000 cases of water-borne illness caused by *Cryptosporidium* associated with human activities and livestock (see box below). *Giardia, Campylobacter* and viruses have also caused problems in BC's water supplies.

Cryptosporidium: *Cryptosporidium is a microscopic parasite that can contaminate water sources. It infects the intestines, causing diarrhea, cramps and nausea that may last for three weeks or longer. It can be fatal for people with weakened immune systems. Disinfection by chlorination alone may not be effective in eliminating this parasite from drinking water.*

The lesson of the Walkerton incident is constant vigilance — more must be done to ensure that the lakes, rivers, streams and groundwater sources upon which we rely are protected from contamination. Treatment standards also need to better reflect our understanding of emerging health risks.

In October 2000 Premier Ujjal Dosanjh, speaking at the Union of BC Municipalities annual convention, committed the provincial government to developing a drinking water protection plan with local governments. He said local governments and other stakeholders would be invited to help determine what is needed to protect our drinking water.

This discussion paper follows up on that commitment by beginning a consultation with British Columbians on this important public health issue. The paper identifies key challenges that need to be addressed in providing safe drinking water to all British Columbians, and identifies actions and proposals for addressing these issues. These include measures to protect and improve the water we drink, and to increase knowledge about threats to our water.

We want to make sure British Columbians have the opportunity for input into developing a drinking water protection plan. We are encouraging water providers, local governments, health officials, environmental groups, resource industries, farmers, ranchers and individuals to help comment on this plan. We are also consulting with First Nations on this plan. What is heard and what is said during the consultation process will assist the provincial government in finalizing a plan to protect drinking water sources and improve water treatment.

Regional information sessions for interested groups and individuals will be held in January and February in Nanaimo, Abbottsford, Kelowna, Cranbrook, Smithers, Prince George, Fort St. John, Williams Lake and Greater Vancouver. Government officials and other stakeholders will be present to provide further information and answer questions. Written comments are also welcome. For more details about the information sessions and how to provide your comments, please see the end of this paper.

What the experts say

Public health and water quality experts agree that four requirements must be met to ensure that drinking water is safe:

- There must be management of the water source— i.e. where it comes from — through effective controls over land uses to prevent contamination;
- There must be appropriate water treatment;
- There must be sound, well-maintained and safe water distribution systems, so that water does not become contaminated in its delivery; and
- There must be effective monitoring of water quality and enforcement of standards.

In his 1999 report "Protecting Drinking-Water Sources" the Auditor General made 26 recommendations regarding the protection of drinking water sources (see box below). He examined a number of community water sources and found that the water could be consumed with only minimal treatment, but that almost all of our drinking water sources are threatened by human activities if they are not adequately managed.

The Auditor General identified a need to guard against contamination caused by increasing human activity that puts pressure on water sources around the province. Communities are expanding, there is more urban and rural development, and important economic activities such as forestry, mining, tourism, farming and ranching will increasingly interact with drinking water sources.

The Auditor General noted that protecting source water can reduce treatment costs and may reduce health risks. A poor quality source places a burden on local ratepayers that may be avoided through source protection measures. But he also recognized that trying to protect drinking water by shutting down all other economic and social activities is unrealistic. He noted that even with good protection at source, some forms of water treatment are necessary. He concluded that a layered or "multi-barrier" approach, combining a mix of protection and treatment, offers the best value for money.

Auditor General's Report: "If all surface-water systems in BC were to add filtration, the cost would be significant. For the approximately 100 municipalities outside Victoria and Vancouver that use unfiltered surface water, we estimate the capital cost of installing filtration would be about $700 million and the extra cost of financing, operating and maintaining the new treatment plants would be about $30 million a year. These amounts are large enough to suggest that the issue of source protection is worthy of increased attention". (Excerpt from "Protecting Drinking-Water Sources, Auditor General of British Columbia, 1999)

Several provincial Ministries are involved in drinking water protection and share monitoring and enforcement responsibilities. The Auditor General cautioned that this complex framework of responsibilities is a serious concern and recommended that there should be a single voice or someone with the lead responsibility for drinking water issues. The provincial government recognizes the need for an integration of drinking water protection, and as a reflection of that this proposed plan of action is the product of cooperative work between all affected government ministries.

A plan of action

The provincial government has identified four components for a plan to protect drinking water.

1. Assessing the water

Before undertaking any actions it is important to conduct an inventory of existing and potential problems and risks. Consequently, the first step in a plan of action should be about assessments. There are two areas where assessments need to be conducted to ensure drinking water is safe. The first is in the water *sources* (watersheds and aquifers), and the second is in the water *system (treatment and distribution).*

Water sources:

Victoria and Vancouver are two examples of communities in BC with significant control over their watershed lands, either through Crown lease or private ownership. This gives them the capacity to manage activities in their water sources. However, most other water sources in BC are, and will continue to be, a combination of private and crown lands that support multiple use.

Water providers relying on these multiple use water sources usually do not have control over land use and therefore tend to focus on what they do have control over, namely the treatment and distribution systems. Furthermore, they may not be aware of natural conditions or land use activities around watersheds and aquifers and how the activities may degrade water quality. Smaller providers often lack the staff, expertise, resources or opportunity to consider risks posed by land uses or natural events. Without an assessment, opportunities for taking preventative or remedial action could be missed.

Regional health officials focus on regulating water systems with limited involvement in some protection issues, usually in response to a contamination event. Provincial authorities have the power to regulate waste discharges and manage sources of pollution. But for the most part they have not coordinated efforts to address drinking water sources.

Water providers, and the communities they serve, need to have confidence that lands around lakes, rivers, streams and wells that provide their drinking water are managed with protection of drinking water sources as a priority.

Water Systems:

The term "water system" is used to describe essentially everything that is done to the water once it is collected from the source. This includes the infrastructure for collecting (pipes, intakes wells), the treatment of the water, and the distribution system for delivering the water to consumers.

There are over 3500 water systems in BC that provide water to two or more customers. These have been built over several decades and consequently the technology used and the condition of the infrastructure varies greatly. There are also significant differences in system sophistication depending on the whether the system serves a small community or a larger municipality. The public, the water supplier, health officials and other regulatory agencies need to know if the existing systems will provide safe water to drink, now and in the future.

Proposed approach:

One way to address these issues is to create a comprehensive inventory and assessment of the water sources — the watersheds or groundwater capture zones used by water suppliers. The status of treatment and distribution systems and the operational characteristics of the water works could also be assessed. The combined source water and water system assessments would provide health, environment and resource management authorities with a comprehensive evaluation of the threats to drinking water safety – which in turn allows for the consideration of needed actions.

Where needed, the government could assist water providers to make water supply assessments. These assessments could:

- identify watersheds containing surface water sources and the areas of aquifers from which wells draw groundwater;
- identify land uses that pose real threats to drinking water quality;
- document water system treatment and distribution system infrastructure, system weaknesses and historical performance;
- assist regional health officials and other government officials, in specifying preventive or remedial measures that could be taken at the local level to protect drinking water quality;
- provide documentation on drinking water issues to local or provincial land use planning tables;
- guide provincial agencies and health authorities to better enforcement; and
- provide valuable information for the public who use the water system.

Assessments are the critical starting point in drinking water protection.

2. Community planning

The Auditor General noted that communities and water providers do not presently have adequate input into regional planning or other activities in areas which could affect their water sources.

Local governments and improvement districts, as water providers, are responsible for supplying safe drinking water in accordance with the *Health Act*. But outside of zoning bylaws, they have varied influence over land use planning or land uses which pose pollution risks to their drinking water sources. Private utility water providers have even less opportunity to address threats to their water supply. Furthermore, some of the risks identified by a community-based assessment (above) may be in areas that are outside municipal or regional boundaries.

It is evident that the ability of water providers to deliver safe drinking water often depends on the resources available to invest in treatment and distribution infrastructure. Many smaller water systems in BC may not be economically viable and consequently they may not be able to meet health standards in the long term. In other situations, communities continue to expand without establishing adequate water systems. They remain reliant on individual wells or surface sources in areas which may become increasingly subject to degradation from this urbanisation. Such situations are difficult for communities to address on their own, especially those that are unincorporated.

The geographical scale or technical complexity of the problem may exceed the current capacity for local action or it may be difficult to resolve conflicting interests between stakeholders.

Proposed approach:

Where assessments identify a threat to a water source, a number of possible actions could take place.

If it is a minor issue health or environmental officials could undertake actions such as discussing the problem with the parties to garner voluntary compliance or by enforcing existing regulations. If land use issues are identified they could be referred to the appropriate local authority. And if there are serious health risks then immediate action would be taken by

health officials in the case of water system issues, or by environmental officials with in the case of source water problems. The assessment would provide health and environmental officials a key tool for coordinating their respective actions.

Larger more complex issues that require further integration of community actions, could be referred to a local multi-stakeholder committee, with provincial support. Water providers, land owners, resource users and communities could be involved in developing a drinking water protection plan for their community. Such a committee could:

- Use existing planning forums;
- Modify existing planning processes where necessary;
- Recommend a new planning process, for a designated area to address drinking water sources, that integrates the actions of all provincial agencies and local authorities; and
- Engage communities to establish community water system plans or upgrade existing ones.

The local committee and local government could be given assistance by the province to develop and implement a drinking water protection plan which recognizes drinking water as a priority while balancing other community interests.

3. Local influence & authority

Implementation of a drinking water protection plan using existing enforcement and regulatory powers alone may not be sufficient for local communities to protect their drinking water. In these situations it may be more beneficial and efficient for communities to have additional authority to implement drinking water protection measures themselves. Some local governments have called for measures to give them more control over activities outside their jurisdiction that threaten the quality of their current drinking water supplies.

Proposed approach:

The first step to more local control is to make the assessments and monitoring reports public and available for community review. In addition, water providers' emergency response plans should also be public.

We are also exploring ways to increase local government influence over land use decisions and issues. For example, if local communities request it, and have the capacity to exercise them, certain powers vested in the province could be delegated to local governments. Areas where communities could be given additional authority include:

- conducting inspections,
- monitoring,
- co-ordination of by-laws among several municipalities, and
- land use decisions affecting drinking water.

In addition, local governments may seek some form of Crown land tenure, such as Community Forest Tenure, to manage forest resources and protect the source of their drinking water.

4. General drinking water measures

Drinking water assessment, planning and increased local authority are ways to help communities protect the quality of their drinking water. But these measures will need to be supported by a framework of science-based enforceable provincial standards to ensure province-wide consistency in public health protection. Standards may be necessary for both water sources and water systems.

Water Sources:

The present situation regarding drinking water sources suggests that more could be done through the application of standards for practices to protect these sources. Currently there is ongoing monitoring and assessment of results carried out at the discretion of provincial and regional authorities, but there are no provincial standards specifying minimum monitoring requirements for drinking water sources.

While the suitability of water quality for consumption is set out in provincial and national guidelines these guidelines may or may not be enforced and action may or may not be taken. Therefore, it is not always clear to authorities or the public what should happen when a guideline is exceeded.

As well, there are presently no minimum standards for the design, construction, maintenance and closure of groundwater wells in British Columbia. Wells used for public water supplies are subject to a broad range of requirements specified at the discretion of local health officials. However,

at present these are not applied consistently, and do not apply to private wells. If not properly built and maintained, wells can be contaminated by floodwater, seeping sewage and other pollutants. If one contaminated well is not dealt with, it can affect the source of water used by other wells in the area.

At present, those who drill wells and install and maintain well pumps are not required to have special training. Consumers of well water will not know who received adequate training.

In most areas of the province, surface and well water is affected by unique factors related to geological formations, climate and hydrological factors which greatly influence natural water quality. These factors need to be accounted for in setting source water quality standards.

Proposed approach:

1. The government could set province-wide and/or site specific standards for drinking water sources similar to those in other jurisdictions (see box below). Those standards could include maximum allowable levels for specified substances that cannot be readily removed by conventional water treatment, or include standards for the frequency of monitoring by water providers.

   Applying enforcement or remedial actions where source water standards are exceeded can be very difficult in some circumstances due to the technical difficulty in identifying the cause, the possibility that the standard was exceeded by several causes, or because it is confounded by natural background variability. Consequently, standards may only be of practical value for certain priority substances or in well documented site-specific situations.

Water Quality Standards:
Alberta, Quebec, Ontario and New Brunswick have adopted all or most of the Canadian Drinking Water Quality Guidelines as standards. These apply to tap water quality. Newfoundland, PEI, Nova Scotia, Manitoba, Saskatchewan and BC have adopted only a limited number of the guidelines as standards. As for source water standards, while no Canadian jurisdiction has adopted enforceable standards, a number of American states, including Washington, have adopted the US Environmental Protection Agency guidelines as standards.

2. Monitoring and reporting of source water quality by water providers could be required. Further training of water providers in source water monitoring and assessments would be needed.

3. Site-specific standards defining the maximum limits for problem substances could be introduced in response to community assessment or planning. "Protection Orders" would continue to be issued to stop activities that contaminate drinking water sources which may not be covered by existing regulatory processes or which occur unexpectedly. These can be activities with short-term impacts such as land excavation that causes erosion and, consequently, washes into a water supply. Protection Orders could also halt activities that result in long-term contamination if allowed to continue, for example, fuel leaks or unsafe pesticide applications.

4. The provincial government could also require well drillers and pump installers to meet certain specific standards for the design, construction, maintenance and closure of wells. The provincial government could introduce training and certification to ensure well drillers and pump installers meet these standards.

5. The registration and identification of wells could be required.

6. Community well owners could be required to prevent the entry of floodwater or harmful seepage by modifying or sealing a well that is subject to periodic flooding. Owners of problem wells - those that could affect other wells by contaminating an aquifer - could be required to close and seal their wells.

Water Systems:

The *Safe Drinking Water Regulations*, administered by health officials clearly places an obligation on water providers to provide potable water to all consumers. However, training and certification opportunities have not been equally available across the province. Some water providers are not currently adequately disinfecting surface water and many do not have an emergency response plan.

Proposed approach:

Working with the British Columbia Water and Waste Association, the Ministry of Health proposes to introduce a requirement for training and certification for waterworks operators. A certification process exist and subsidies are available for operators of small water systems.

As well, we need to continue to improve the enforcement of the Safe Drinking Water Regulations, specifically requiring disinfection of all surface water supplies. And education initiatives will be stepped up to address the need for emergency response plans. Minimum standards for tap water quality monitoring and public reporting by water providers would be required.

Research and Education:

There are still gaps in our knowledge regarding water source characteristics and the relationship between different land use practices, as well as the presence of chemical contaminants, pathogens or indicators of pathogens in drinking water supplies. There is a need to improve scientific understanding of risks associated with drinking water and to commit financial resources to water treatment.

Proposed Approach:

More research will be undertaken to determine the relationship between source water, land use practices and treatment. Monitoring programs which are tailored to increase knowledge of source water and land use practices and research that addresses the relationship between contaminants, source water characteristics, land use activities and treatment could be developed.

To better inform the public about safe drinking water, a public education program could be developed to increase public awareness and understanding of drinking water protection and treatment issues. Such a program could also include targeting individual domestic water users who do not recieve the benefits of a community water system.

Summary

In this discussion paper we have set out a draft plan of action for protecting drinking water in BC. We have outlined the need for a "multi-barrier" approach that will use a combination of measures to ensure water sources are properly managed and waterworks systems provide safe drinking water. The proposed measures include comprehensive assessments of water sources and waterworks systems, new drinking water planning procedures, more effective local influence and authority, enforceable standards, better access to information and public education programs.

To implement this draft plan of action, it is clear that government would need to provide financial and technical assistance to communities to undertake this plan. The Ministry of Environment Lands and Parks, as the government agency with prime responsibility for source water management, could provide technical expertise on source water assessments and land use planning. The Ministry of Health could work closely with regional health authorities to assist water providers meet new standards for waterworks systems. In some situations support for waterworks infrastructure may be required.

The provincial government is inviting water users, water providers and other stakeholders throughout the province to provide input into this proposed plan. Please turn to the final page to see how you comment on this plan.

How to learn more or submit comments

The views of the public in urban, rural and resource-based communities need to be considered. Here's how to be a part of the process.

Information sessions for groups and individuals who want to provide input into the safe drinking water plan will be held in a number of communities throughout BC. Following is an initial list of these communities:

Nanaimo	January 26, 2001
Abbotsford	January 29, 2001
Kelowna	January 31, 2001
Cranbrook	February 2, 2001
Smithers	February 5, 2001
Prince George	February 6, 2001
Fort St. John	February 7, 2001
Williams Lake	February 8, 2001
Greater Vancouver	February 13, 2001

Check local newspapers for the phone numbers or the web-site below for times and locations of the information sessions.

Further information about the consultation process and options for a drinking water source protection plan is also available on our website:

http://www.env.gov.bc.ca/wat/wq/dw/

You may also submit comments at this website.

Those wishing to may send written comments to:
PRAXIS
3848 St. Georges Avenue
North Vancouver, BC
V7N 1W5

You can also fax comments to (604) 980-9992 or send comments by email to Britney@praxis.ca

To speak to staff simply call Enquiry BC and they will transfer your call toll free. Call:

660-2421 in Greater Vancouver;
387-6121 in Victoria; or
1-800-663-7867 in the rest of the province.